

# BCA611 Video Oyunları için 3B Grafik

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Ders6 - Animation and Orientation  
Representation

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# Motion Perception

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A series of images, when displayed in rapid succession are perceived by an observer as a single moving image.

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# Computer Animation

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Computer Animation: Any computer based computation used in producing images intended to create the perception of motion.



# Computer Animation

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- In general any value that can be changed can be animated.
  - position
  - orientation
  - scale
  - color
  - texture coordinates.

# Simple Computer Animation with WebGL

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# Computer Animation (Key frame animation)

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- Specify the properties of the entity to animate
- Specify the keys for each property.
  - A key is a pair of frame number and property value.
- Specify the interpolation type for inbetweening
  - linear, cubic, parametric curves
- Specify the speed characteristics of interpolation
  - constant velocity, ease in ease out, vs.

# Rotation representations

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## **Euler Angles**

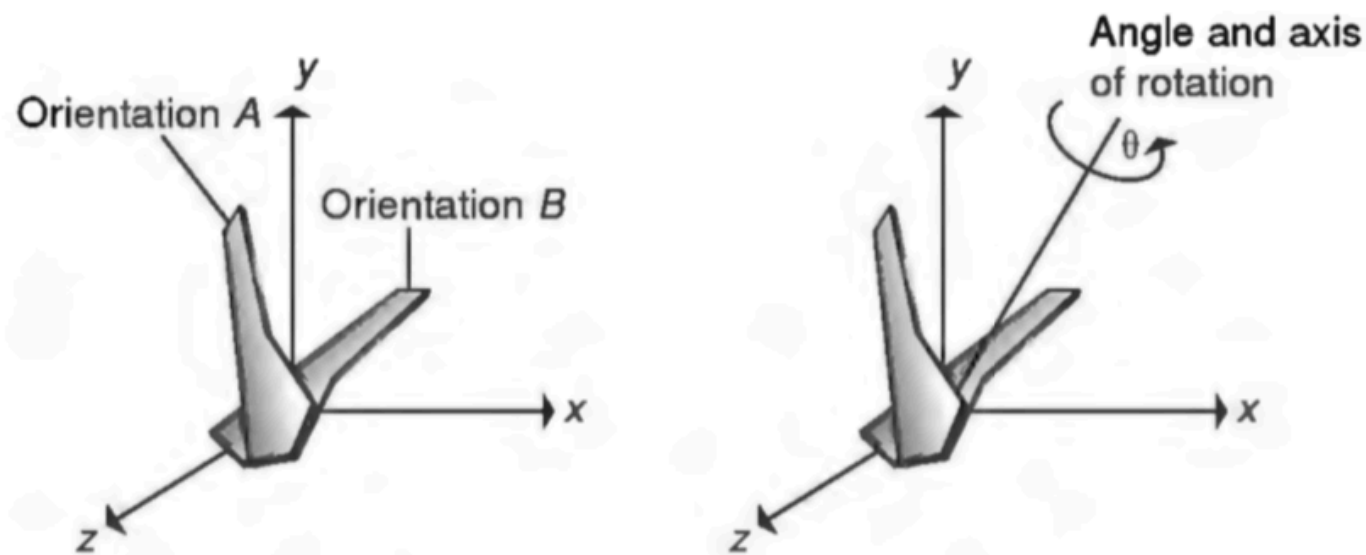
- Intuitive
- Gimbal Lock problem
- Interpolation problem

# Rotation representations

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## Angle and axis representation

- Euler rotation theorem: one orientation can be derived from another by a single rotation about an axis.



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- Hard to concatenate rotations and interpolation



# Rotation representations

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## **Quaternion**

- Representation of angle axis in a different form
- Easy to concatenate(faster multiplication than matrices)
- Easy and correct interpolation(slerp)

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